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## NOTES ON THE EARLY STAGES OF DREPANULATRIX MONICARIA (GUENEE) (GEOMETRIDAE)

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THE LIFE HISTORY of this moth has been treated at some length by Dr. Frederick H. Rindge in his classic "Revision of the Genus" in 1949. No illustrations were included other than of the genitalia.

I have recently reared this species, and made drawings of the egg, first instar larva, final instar larva and pupa. The brief notes accompanying these drawings will serve to supplement, and in a few particulars to amplify Dr. Rindge's text.

A gravid female of *Drepanulatrix monicaria* was captured on May 22, 1962, in Del Mar, California. Numerous eggs were laid May 23 and 24. These were laid singly on their sides. They hatched June 3 and 4.

EGG: The egg is ovoid, the base flattened and the top regularly rounded. It is 0.75 mm. high by 0.50 mm. wide on the average.

The accompanying drawing, (figure 1A) shows it in an upright posture on which I base the measurement of height and width, but Dr. Ridge gives its measurement in relation to the normal prone position, hence the disparity in our terms.

I could detect no "flattening" of viable eggs, nor any that were "wedge shaped."

When first laid, the color was a glistening greenish white. Subsequently it changed to mottled and streaked reddish orange of varying intensities. The surface is covered with longitudinal ridges, approximately 24 in number. Each ridge carries a line of minute pearl-like nodules along its edge. Between the ridges there are transverse lines or low ridges. The base is covered by irregular hexagonal cells with raised walls. The longitudinal ridges seem to fuse into a slightly pitted surface over the rounded top, but no regular micropyle could be detected.

The egg is very similar to that of *Drepanulatrix hulsti*, but is smaller.

The young larvae exit from one end, the remainder of the shell being left intact.

The recorded food plants for this species are *Ceanothus thyrsiflorus* Eschs., *C. macrocarpus* Nutt., *C. spinosus* Nutt., and *C. sorediatus* Hooker & Arnott. Our young larvae readily accepted the first named plant.

FIRST INSTAR LARVA: Length, 3 mm.

Head width, 0.30 to 0.33 mm. Color, glistening yellow, with a

narrow dark margin on the edge of the posterior juncture with the first body segment. Ocelli, black. There is no spotting on any portion. Setae, short and colorless to white.

Body; ground color, light yellow-green, with a wide middorsal band which is olive-green on the first two segments, shading into red-brown caudally.

The first segment is narrower than the head and wider than the second segment. The light green on this segment is slightly tinged with yellow. The black papillae on the body are relatively smaller than those on *Drepanulatrix hulsti*, but occupy much the same positions. They are narrowly encircled at their bases by white, in strong contrast to the wide white circlets on *D. hulsti*.

The setae are black. A substigmatal band is usually present.

The first larval instar is shown in dorsal aspect on figure 1B.

FINAL INSTAR: This is given in detail by Dr. Rindge in his Revision. The wide variation in color and markings is particularly noteworthy. No two examples are exactly alike. The color ranges from a smoky gray (almost black and heavily spotted) to a rich spotted green. Two dark examples have a discontinuous middorsal line of burnt orange. The green and tan examples lack this, or show only slight suggestions of it. All types are sprinkled with either light or dark spots. The specimen I selected was probably in the early phase of the final instar and not fully grown as it measured only 13 mm. It is pictured in lateral aspect on figure 1C. In this example the head was yellow and the body green, with white spots.

PUPA: Length, 10 mm. Greatest width, 3 mm. Head well rounded. Eyes not prominent. Antennae and maxillae extending to wing margins. Abdomen tapering to cremaster,—the latter ending in a large papillus which bears four recurved hooklets each side of the median line. Two of these, centrally placed, are relatively long. All arch laterally.

The color of the chrysalis is deep brown, with a slight tinge of green on the wing cases in newly formed pupae. The surface texture is glistening.

The pupa is shown in figure 1D. An enlarged figure of the cremaster is included on figure 1E.

The first imago emerged July 23, 1962.

This moth ranges along the Pacific coast from southern Alaska to the Mexican border, and perhaps into northern Baja California.

Dr. Rindge recorded three parasites, i.e. *Chaetophlepsis* sp., *Patelloa* sp., and *Apanteles* sp.

## REFERENCES

- RINDGE, FREDERICK H. 1949. A Rev. of the Geometr. Moths formerly assigned to *Drepanulatrix*. *Lepidoptera. Bull. Am. Mus. Nat. Hist.* 94: (59) pp. 233-298. Egg, larva, pupa, food pl.  
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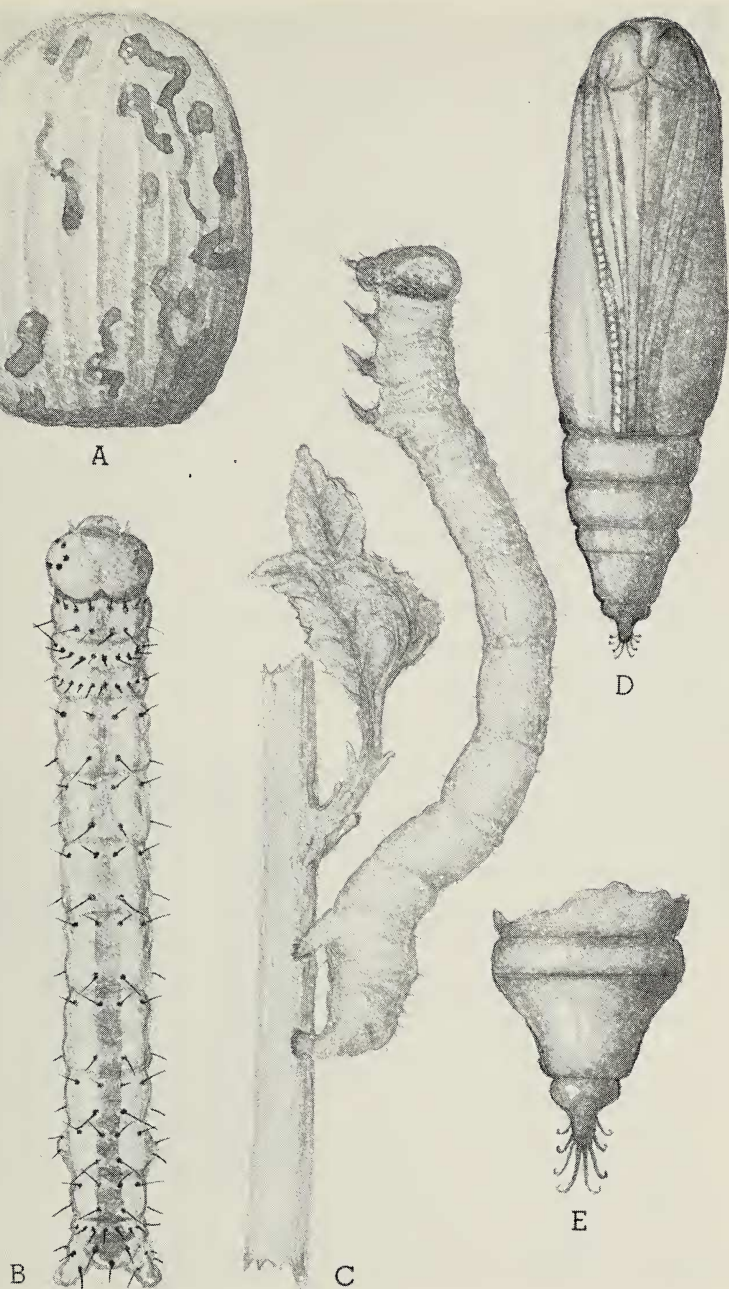


FIGURE 1. Early stages of *Drepanulatrix monicaria* (Guenée) A. Egg, enlarged X 90. B. First instar larva, enlarged X 40. C. Mature larva on twig of *Ceanothus*, enlarged X 10. D. Pupa, ventral aspect, enlarged X 10. E. Cremaster, enlarged X 20.

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